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EXAMINER	
EDWARDS, PATRICK L	
ART UNIT	**PAPER NUMBER**
2621	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/863,392	SASAKI, DAIGO	
	Examiner	Art Unit	
	Patrick L Edwards	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☒ Claim(s) *1,6,11,16,23 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The response received on July 18, 2004 has been placed in the file and was considered by the examiner. An action on the merits follows.

Response to Arguments

2. The applicant's arguments, filed on July 18, 2004, have been fully considered. A response to these arguments is provided below.

Specification Objections

Summary of Argument: The applicant has amended the specification to eliminate the errors listed in the previous action.

Examiner's Response: The examiner agrees. The specification objections are hereby withdrawn.

Claim Objections, 35 USC § 112, First and Second Paragraph Rejections

Summary of Argument: The applicant has amended the claims which were objected to and/or rejected in the previous action. In addition to amending the claims in question, the applicant has traversed the 35 USC § 112(1) rejections by clarifying the issues raised by the examiner. The applicant argues that the amendment to the claims should obviate the claim objections and the claim objections under 35 USC § 112(2). The applicant further argues that the provided clarifications should obviate the rejections under 35 USC § 112(1).

Examiner's Response: The examiner agrees that the applicant, via claim amendment and explanation, has cleared up all of the specific issues raised by the examiner. As a result, those specific objections/rejections are hereby withdrawn. In amending the claims, however, the applicant has added new problems to the claims which will be discussed in the below objections.

Prior Art Rejections

Summary of Argument: The applicant has amended independent claim 1 (and the other independent claims) by adding the limitation that "said target pixel having one of pixel values included in said local area according to the filtering operation". Applicant argues that this added limitation is not taught by the Hayashi reference, and, consequently, overcomes the § 102 and § 103 rejections set forth in the prior action.

Examiner's Response: The applicant's arguments have been fully considered but are not persuasive. The examiner is not persuaded that the applicant's amendment distinguishes the invention from the Hayashi reference. Indeed, this amendment does not appear to alter the scope of the claim in any way, shape, or form. The original claim recited "applying a filtering operation to the target pixel and the neighboring pixels in the local area". The newly amended claim recites 'applying a filtering operation to the target pixel ... said filtering operation such that said target pixel has one of pixel values included in said local area according to the filtering operation'. The breadth

of these two statements is identical. The amended phrase fails to add any limitations the claim. Applicant is reminded of MPEP § 904.01, which states that "during patent examination, the claims are given the broadest reasonable interpretation". Applying the broadest reasonable interpretation to this claim, the phrase "pixel values included in the local area", refers to all pixel values that fall in the range of pixel values between the largest pixel value in the local area, and the smallest pixel value in the local area. Using this interpretation, it is apparent that the scope of the claims has not been changed, since filtering operations inherently assign a value to the target pixel which falls between the range of laragest and smallest pixel values in a local area.

The applicant, on page 13 of his remarks, asserts that this added phrase further limits the claim by specifying that the generic filtering operation of the previous claims is now a median filter. The examiner disagrees, and invites the applicant to use more specific claim language if he wishes to claim a median filter.

The examiner would also like to note that, even if the broad claim language were further clarified to recite a median filter, this would not put the claim (and subsequently the application) in a condition of allowability over the prior art. Median filters are well known in the art, and one has to look no further than the prior art cited in the previous action to find an example of a median filter (see the Kundu et al. reference, US Pat. No. 5,218,649). Also, please make note of Lakshminarayanan et al (USPN 5,933,540), which is another reference that utilizes median filtering in the same environment as the instant invention.

Claim Objections

3. Claims 1, 6, 11, 16, 23, and 28 are objected to because of the following informalities:

The phrase "said target pixel has one of pixel values included in said local area" is grammatically awkward and confusing. Specifically, the phrase 'one of pixel values' appears to be grammatically incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 11, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi et al. (USPN 6,041,145).

With regard to claim 11, which is representative of claim 1, Hayashi discloses a means for defining a local area in an input image which includes a target pixel and neighboring pixels surrounding the target pixel (col. 5 lines 45-49), and a filter for applying a filtering operation to the target pixel and the neighboring pixels in the local area. This filtering operation is such that the target pixel has one of pixel values included in the local area (col. 5 lines 43-50). The smoothing filter disclosed in Hayashi filters the target pixel in a local area. This filtering operation is done over all the pixels in the entire image (col. 16 lines 39-41). Hayashi further discloses an image mixer for mixing the filtered image and the input image together at a specific mixing ratio in order to form an output image (col. 7 lines 5-11).

With regard to claim 23, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in Hayashi is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 6, 16, 22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (USPN 6,041,145) in view of Kitamura (USPN 4,703,363). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 16, which is representative of claim 6, Hayashi discloses a smoothing filter, but fails to expressly disclose that the smoothing filter provides filtered image which has a jaggy different in phase from a jaggy in the input image, and that the jaggies in the input image are suppressed by the filtering operation.

Kitamura, however, discloses a smoothing filter which suppresses jaggies in an image (Kitamura col. 2 lines 1-5). The smoothing filter of Kitamura produces an output image in which the jaggies of the input image are smoothed. Consequently we can say that this output image has jaggies different in phase from the jaggies in the input image. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's smoothing filter by using the smoothing filter to remove jaggies in an image as taught by Kitamura. Such a modification would have allowed for a system that applied a smoothing filter for the purpose of removing jaggies in an image (Kitamura col. 2 lines 1-5).

With regard to claim 22, Kitamura further recites a system for removing jaggies (Kitamura col. 2 lines 1-5) in an image which is displayed on a display apparatus (Kitamura col. 1 lines 19-21). As a result, Kitamura discloses

a display controlling apparatus in that he teaches controlling the images which are displayed on the display apparatus.

With regard to claim 28, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi and Kitamura is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi and Kitamura.

8. Claims 2, 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claims 1, 11 and 23 above, and further in view of Kundu et al. (USPN 5,218,649). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 12, which is representative of claim 2, Hayashi discloses a filter, but fails to expressly disclose that the filter is a median filter. Kundu, however discloses a filter for removing jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41) by utilizing a median filtering operation in which the pixel having a median value of density values of all the pixels in the local area is extracted and used for forming the filtered image (Kundu col. 8 lines 1-5). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's filter by specifying that the filter is a median filter as taught by Kundu. Such a modification would have allowed for the use of a filter that can be used in order to removie jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41).

9. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Kitamura as applied to claims 6 and 16 above, and further in view of Kundu et al (USPN 5,218,649). The arguments as to the relevance of Hayashi and Kitamura as applied in paragraph 10 above are incorporated herein.

With regard to claim 17, which is representative of claim 7, the combination of Hayashi and Kitamura discloses a filter, but fails to expressly disclose that the filter is a median filter. Kundu, however discloses a filter for removing jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41) by utilizing a median filtering operation in which the pixel having a median value of density values of all the pixels in the local area is extracted and used for forming the filtered image (Kundu col. 8 lines 1-5). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi and Kitamura's filter by specifying that the filter is a median filter as taught by Kundu. Such a modification would have allowed for the use of a filter that can be used in order to removie jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41).

10. Claims 4, 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claims 1, 11 and 23 above, and further in view of Cliquet (USPN 6,674,903). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 14, which is representative of claim 4, Hayashi fails to expressly disclose an interpolation processor for enlarging an original image at a specific enlarging ration through interpolation to form the input image. Cliquet, however, discloses removing jaggies (or staircasing) from an image after it has been electronically enlarged (Cliquet col. 4 lines 22-24). Electronic images are enlarged by adding image (or pixel) information to an original image in order to form an enlarged image. These pixels are inherently added to the image by some form of interpolation processing. As a result, an interpolation processor is inherently disclosed in the teachings of Cliquet. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's image processing system by including an interpolation processor as taught by Cliquet. Such a modification would have allowed for a system that could remove the jaggies from an image after it had been enlarged (Cliquet col. 4 lines 22-24).

With regard to claim 26, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi and Cliquet is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi and Cliquet.

11. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Kitamura as applied to claims 6 and 16 above, and further in view of Cliquet (USPN 6,674,903). The arguments as to the relevance of Hayashi and Kitamura as applied in paragraph 10 above are incorporated herein.

With regard to claim 19, which is representative of claim 9, the combination of Hayashi and Kitamura fails to expressly disclose an interpolation processor for enlarging an original image at a specific enlarging ratio through interpolation to form the input image. Cliquet, however, discloses removing jaggies (or staircasing) from an image after it has been electronically enlarged (Cliquet col. 4 lines 22-24). Electronic images are enlarged by adding image (or pixel) information to an original image in order to form an enlarged image. These pixels are inherently added to the image by some form of interpolation processing. As a result, an interpolation processor is inherently disclosed in the teachings of Cliquet. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's image processing system by including an interpolation processor as taught by Cliquet. Such a modification would have allowed for a system that could remove the jaggies from an image after it had been enlarged (Cliquet col. 4 lines 22-24).

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claim 11 above, and further in view of Kitamura (USPN 4,703,363). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

Hayashi discloses a system for controlling an image, but fails to expressly disclose a displaying device for displaying the image. Kitamura, however, recites a system for removing jaggies (Kitamura col. 2 lines 1-5) in an image which is displayed on a display apparatus (Kitamura col. 1 lines 19-21). As a result, Kitamura discloses a

display controlling apparatus in that he teaches controlling the images which are displayed on the display apparatus. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's image processing system to include a display for displaying the processed image as taught by Kitamura. Such a modification would have allowed for a system in which the processed images could be displayed on a display apparatus (Kitamura col. 1 lines 18-21)

13. Claims 3, 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claims 1, 11 and 23 above, and further in view of Kishimoto (USPN 6,339,479). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 13, which is representative of claim 3, Hayashi discloses a filtering operation in which in an average value of density values in the local area is calculated, but fails to expressly disclose that one of the pixels having a nearest density value to the average value in the local area is extracted and used for forming the filtered image. Kishimoto, however, discloses a filter that uses a nearest neighbor method in which an average value of density values in a local area is calculated and one of the pixels having a nearest value to the average value in the local area is extracted and used as the output value (Kishimoto col. 1 lines 59-64). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the generic filter disclosed in Hayashi in order to specify that this filter is a type which outputs a nearest value to a local mean as taught by Kishimoto. Such a modification would have allowed for the utilization of a specific filtering method which is well known in the art.

With regard to claim 25, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi and Kishimoto is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi and Kishimoto.

14. Claims 8 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Kitamura as applied to claims 6 and 16 above, and further in view of Kishimoto (USPN 6,339,479). The arguments as to the relevance of the combination of Hayashi and Kitamura as applied in paragraph 10 above are incorporated herein.

With regard to claim 18, which is representative of claim 8, the combination of Hayashi and Kitamura discloses a filtering operation in which an average value of density values in the local area is calculated, but fails to expressly disclose that one of the pixels having a nearest density value to the average value in the local area is extracted and used for forming the filtered image. Kishimoto, however, discloses a filter that uses a method in which an average value of density values in a local area is calculated and one of the pixels having a nearest value to the average value in the local area is extracted and used as the output value (Kishimoto col. 1 lines 59-64). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the generic filter disclosed in the combination of Hayashi and Kitamura in order to specify that this filter is a type which outputs a

nearest value to a local mean as taught by Kishimoto. Such a modification would have allowed for the utilization of a specific filtering method which is well known in the art.

15. Claims 5, 15 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Cliquet as applied to claims 4, 14 and 26 above, and further in view of Woodson et al. (US PGPUB 2002/0122045). The arguments as to the relevance of the combiantion of Hayashi and Cliquet as applied in paragraph 13 above are incorporated herein.

With regard to claim 15, which is representative of claim 5, the combination of Hayashi and Cliquet discloses an interpolation processor for enlarging an original image to form an input image, but fails to expressly disclose that the mixing ratio is determined according to the enlarging ratio based on the interpolation performed in the interpolation processor. Woodson, however, discloses adjusting an alpha blending value on the basis of the interpolation value (Woodson paragraph [0010]). The alpha blending value disclosed in Woodson is analogous to the mixing ratio as recited in the claim. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the combination of Hayashi and Cliquet in order to include that the mixing ratio is based on the enlarging ration as taught by Woodson. Such a modification would have allowed for a system which would perform proper mixing of a filtered and original image based on the amount the image was previously enlarged. This would have resulted in a system which applied to the proper amount of correction to edges and consequently would produce smooth edges in the processed image (Woodson paragraph [0010]).

With regard to claim 27, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi, Cliquet and Woodson is to function. Therefore, a computer-readable recording medium is inherent in the teachings of the said combination.

16. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi, Kitamura and Cliquet as applied to claims 9 and 19 above, and further in view of Woodson et al. (US PGPUB 2002/0122045). The arguments as to the relevance of said combination as applied in paragraph 14 above are incorporated herein.

With regard to claim 20, which is representative of claim 10, the combination of Hayashi, Kitamura and Cliquet discloses an interpolation processor for enlarging an original image to form an input image, but fails to expressly disclose that the mixing ratio is determined according to the enlarging ratio based on the interpolation performed in the interpolation processor. Woodson, however, discloses adjusting an alpha blending value on the basis of the interpolation value (Woodson paragraph [0010]). The alpha blending value disclosed in Woodson is analogous to the mixing ratio as recited in the claim. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the combination of Hayashi, Kitamura and Cliquet in order to include that the mixing ratio is based on the enlarging ration as taught by Woodson. Such a modification would have allowed for a system which would perform proper mixing of a filtered and original image based on the amount the image was

previously enlarged. This would have resulted in a system which applied to the proper amount of correction to edges and consequently would produce smooth edges in the processed image (Woodson paragraph [0010]).

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Lakshminarayanan et al. (USPN 5,933,540) discloses a median filter in the same environment as the instant invention..

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (703) 305-6301. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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